

The Derivative Song (dy/dx)

words by Tom Lehrer

music: "There'll Be Some Changes Made"

by W. Benton Overstreet (1921)

(public domain)

You take a function of x and you call it y
Take any x -nought that you care to try
You make a little change and call it Δx
The corresponding change in y is what you find next
And then you take the quotient and now carefully
Send Δx to zero, and I think you'll see
That what the limit gives us, if our work all checks,
Is what we call dy/dx ,
It's just dy/dx .

THE DERIVATIVE SONG

words by Tom Lehrer

music: "There'll be Some Changes Made" (*public domain*)
by W. Benton Overstreet (original lyrics by Billy Higgins)

caption on screen

You take a function of x and you call it y

$$y = f(x)$$

Take any x -nought that you care to try

$$y_0 = f(x_0)$$

You make a little change and call it Δx

$$\Delta x = x - x_0$$

The corresponding change in y is what you find next

$$\Delta y = y - y_0$$

And then you take the quotient and now carefully

$$\frac{\Delta y}{\Delta x} = \frac{y - y_0}{x - x_0}$$

Send Δx to zero and I think you'll see

$$\Delta x \rightarrow 0$$

That what the limit gives us if our work all checks

$$\lim_{\Delta x \rightarrow 0} \frac{\Delta y}{\Delta x}$$

Is what we call dy/dx

$$\lim_{\Delta x \rightarrow 0} \frac{\Delta y}{\Delta x} = \frac{dy}{dx}$$

It's just dy/dx

$$\frac{dy}{dx}$$